

Figure 1: BLSR network in normal mode

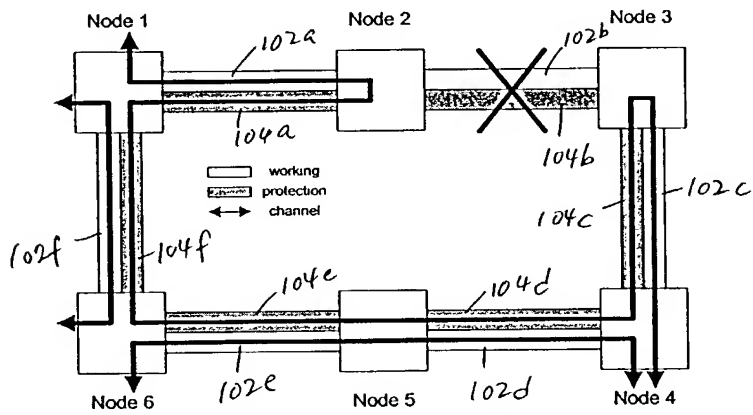


Figure 2: BLSR network in failed mode

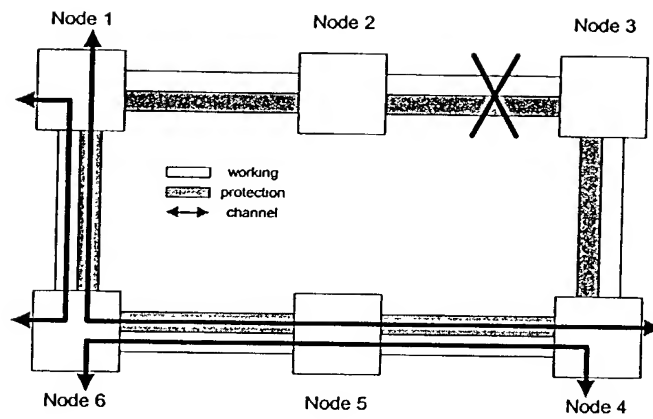


Figure 3: BPSR in failure mode

The diagram shows a network topology with six nodes labeled A, B, C, D, E, and F arranged in a hexagonal pattern. Node A is at the top left, B at the top right, C on the right, D at the bottom right, E at the bottom left, and F on the left. Connections are shown between adjacent nodes and between nodes A and G. Handwritten labels include 204W, 202W, 204P, 202P, 206, and 208. There are also two large black circles at the top of the page.

Figure 2: Switching failed paths in the case of link failure

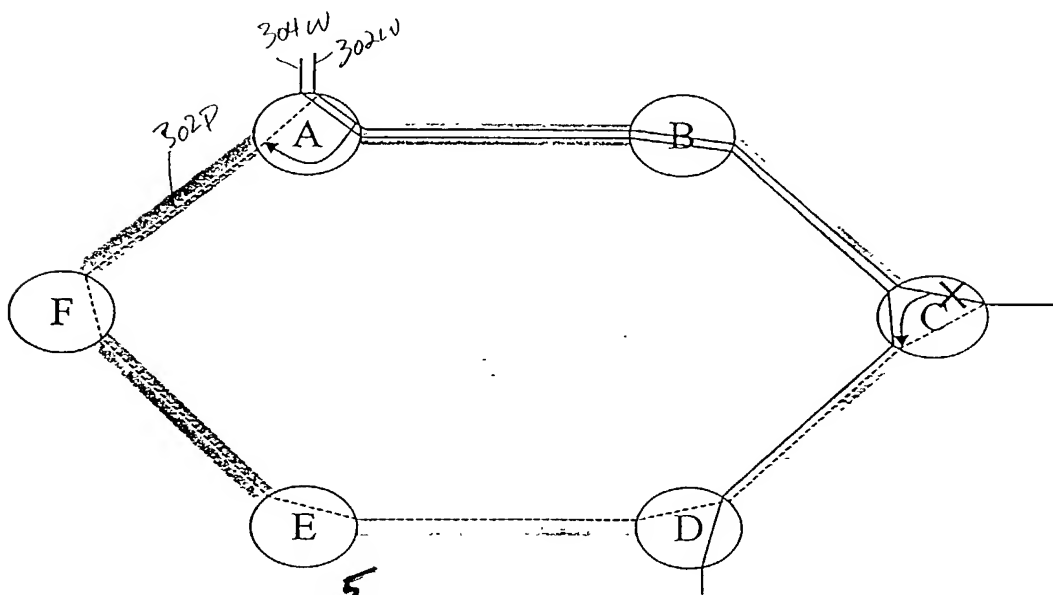


Figure 4: Switching only the failed path in the case of equipment failure

10045955-110604

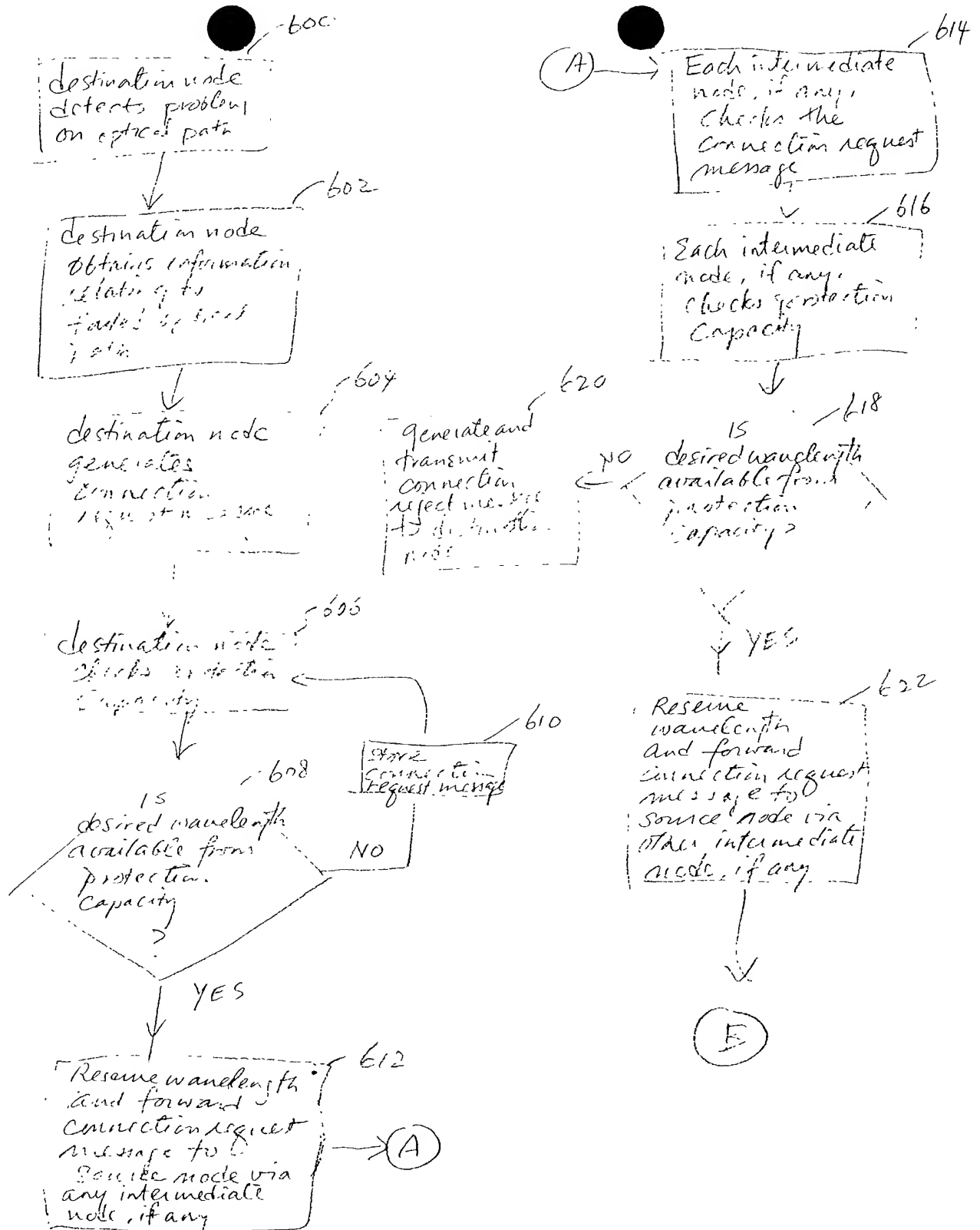


Fig. 6a

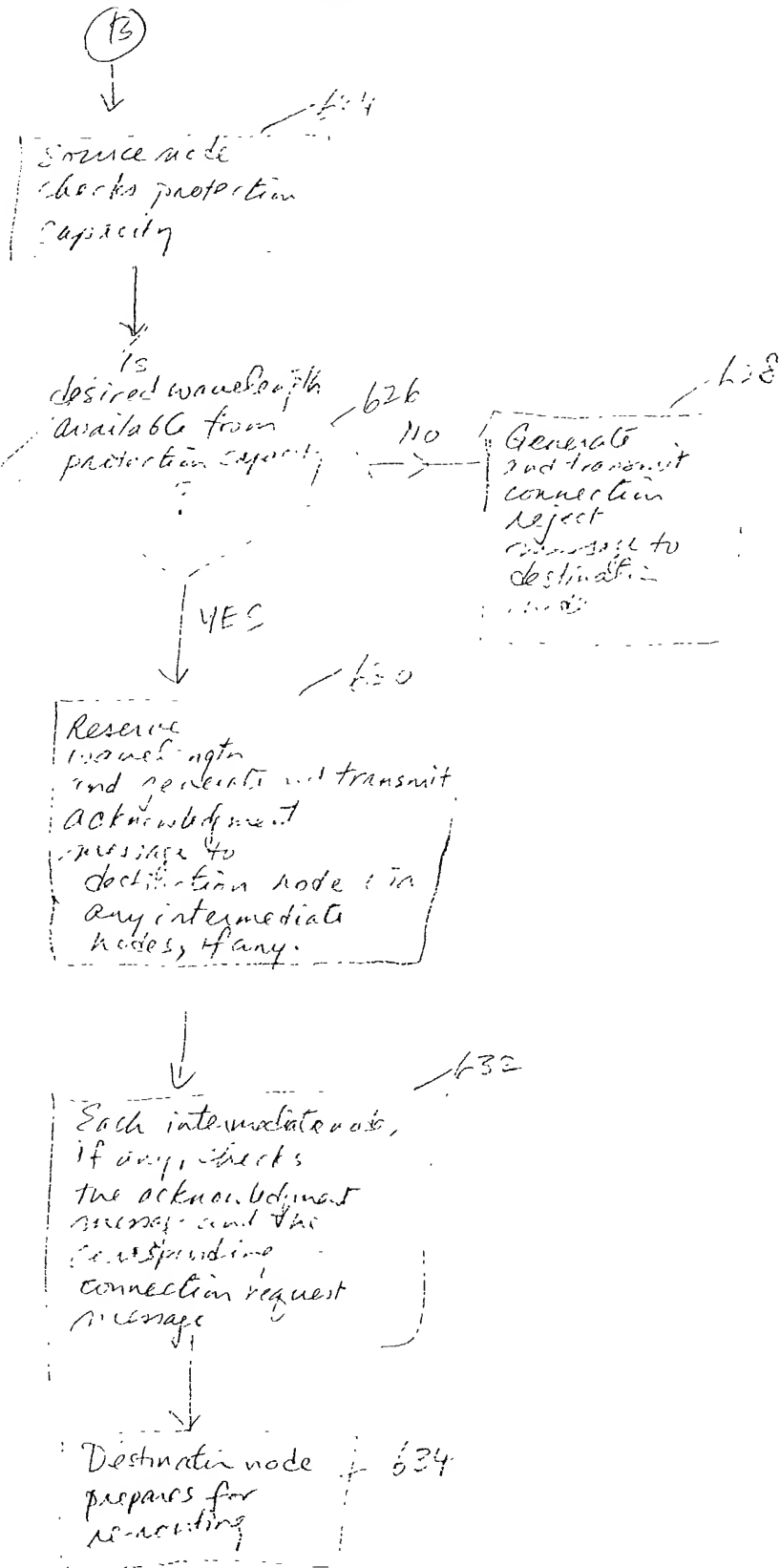


Fig. 6b

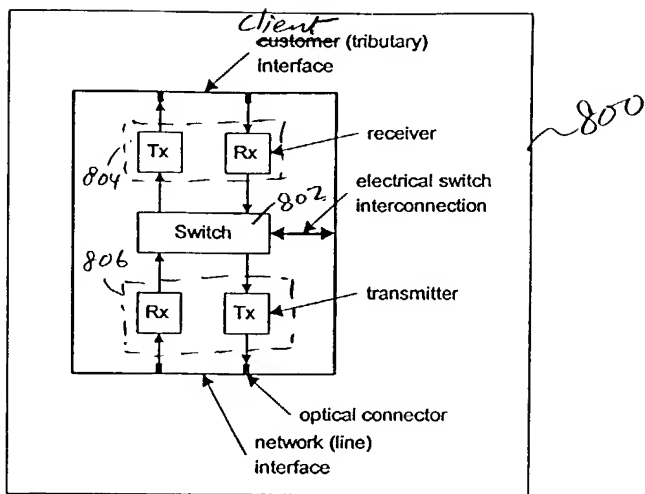


Figure 8

[23] These will be shown in greater detail later.

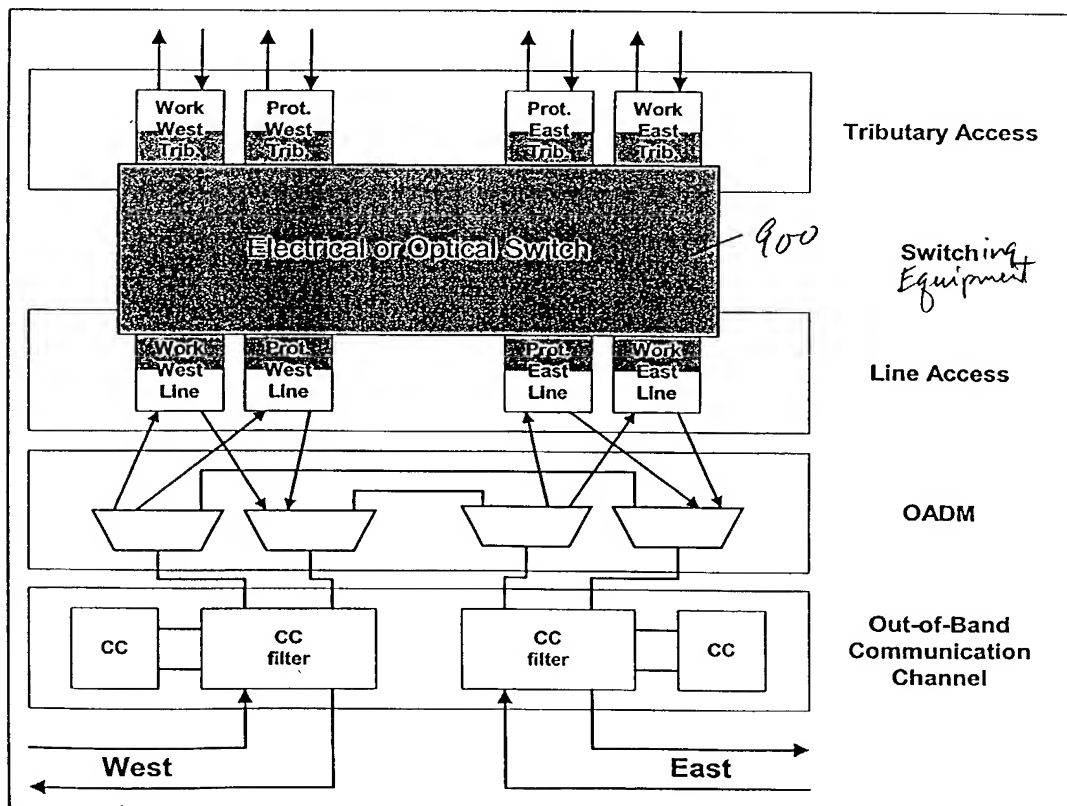


Figure 9

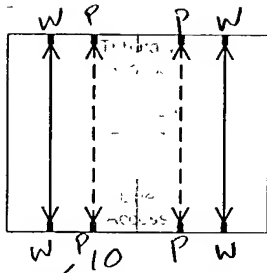


Figure 6: Switch in Normal Mode

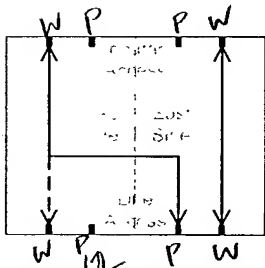


Figure 7: Switch in Ring-Switch East Mode

2004-09-01 14:00:00

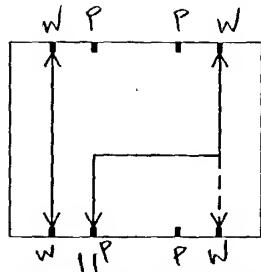


Figure 8: Switch in Ring-Switch West Mode

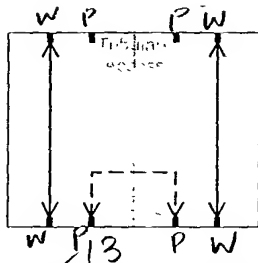


Figure 9: Switch in Bridge Mode

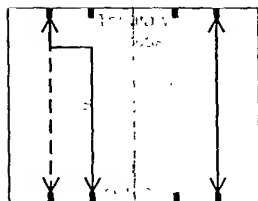


Figure 10: Switch in Span Mode

10045955-1000

1604W 1602W 1604E 1602E

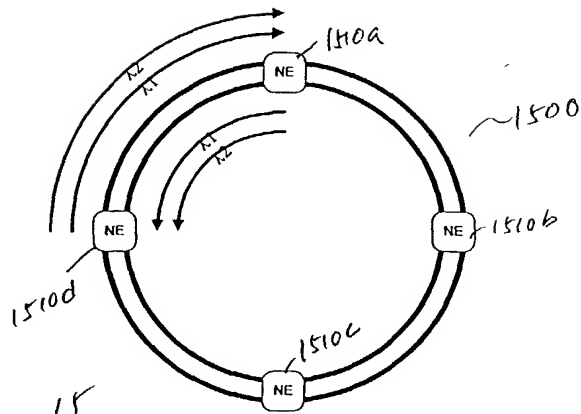


Figure 1: Wavelength assignment for CW and CCW direction

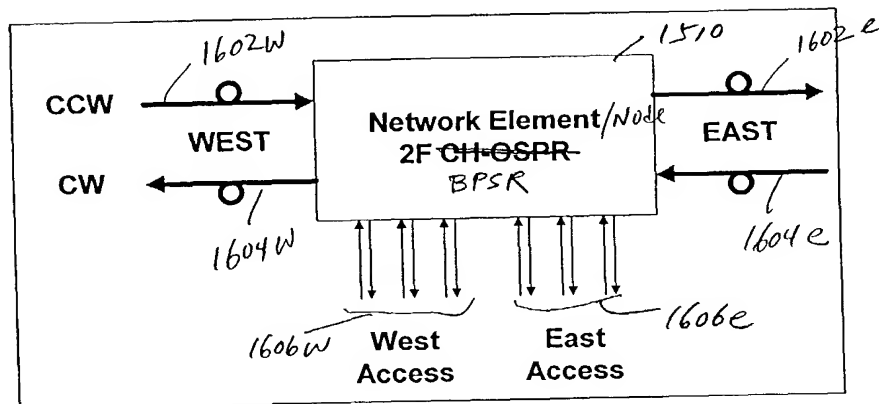


Figure 2: Network Element

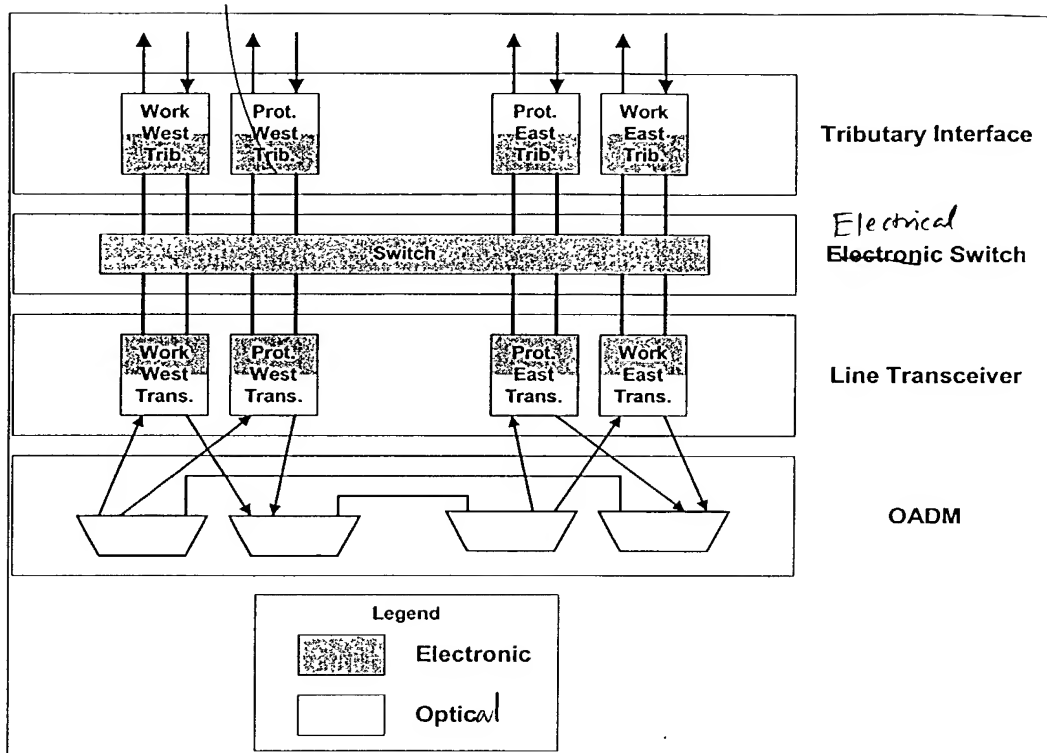


Figure 11: Network Element with Electrical Switch

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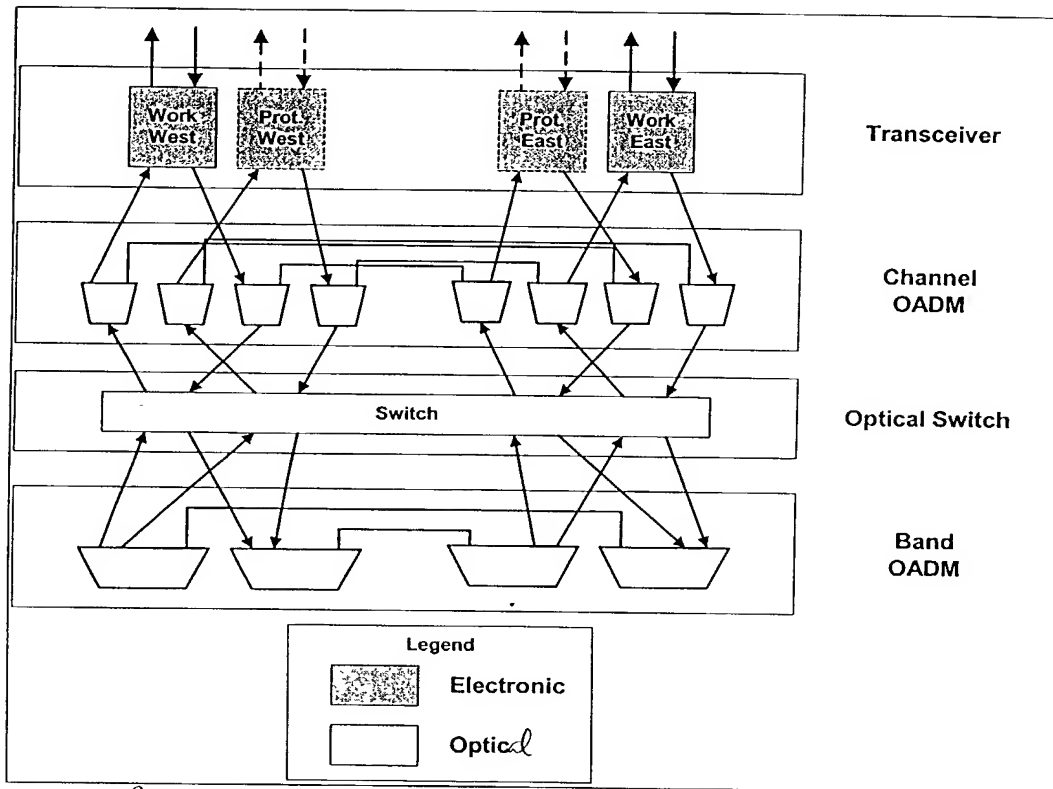
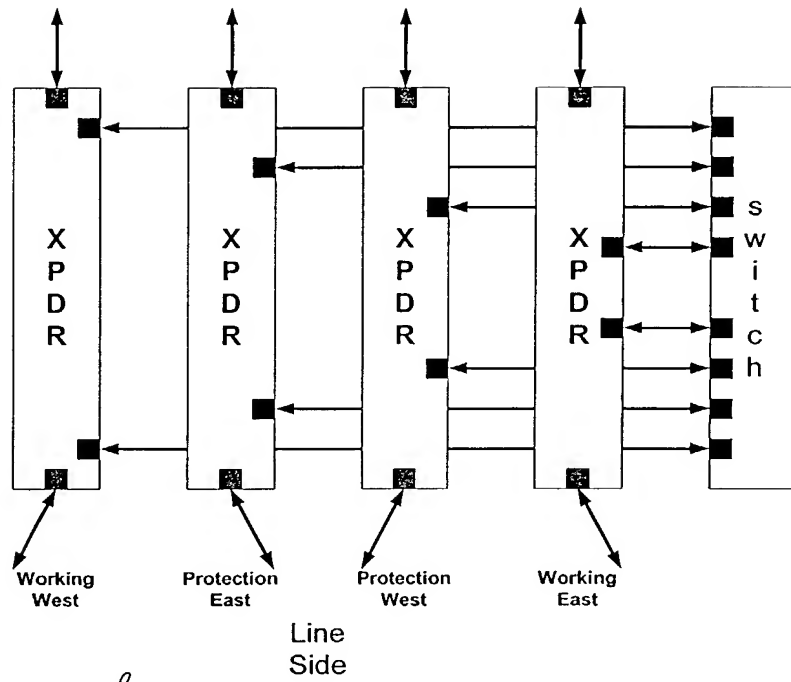


Figure 13: Network Element with an Optical Switch

400459ms 40004



19
Figure 14: Centralized Switching

404595E-4000

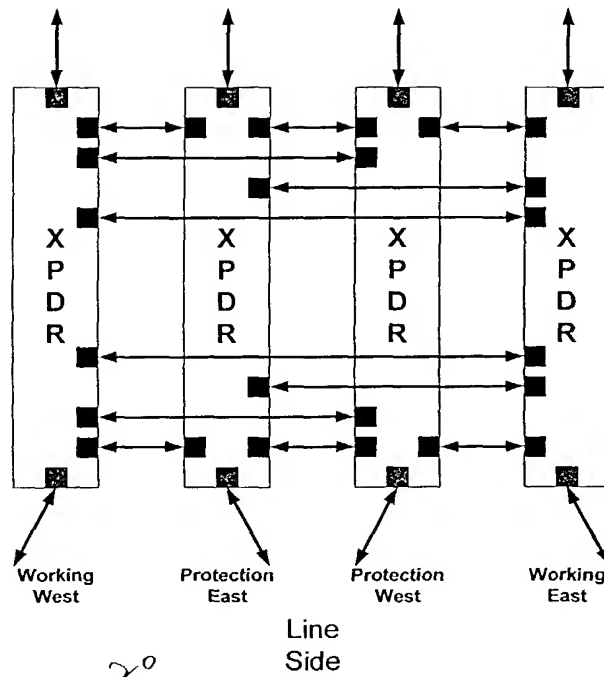
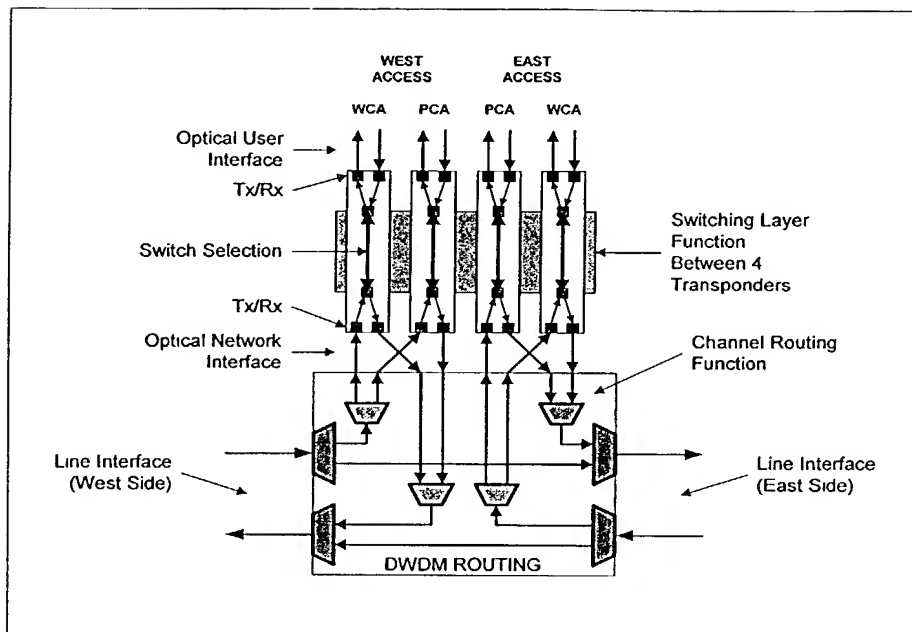
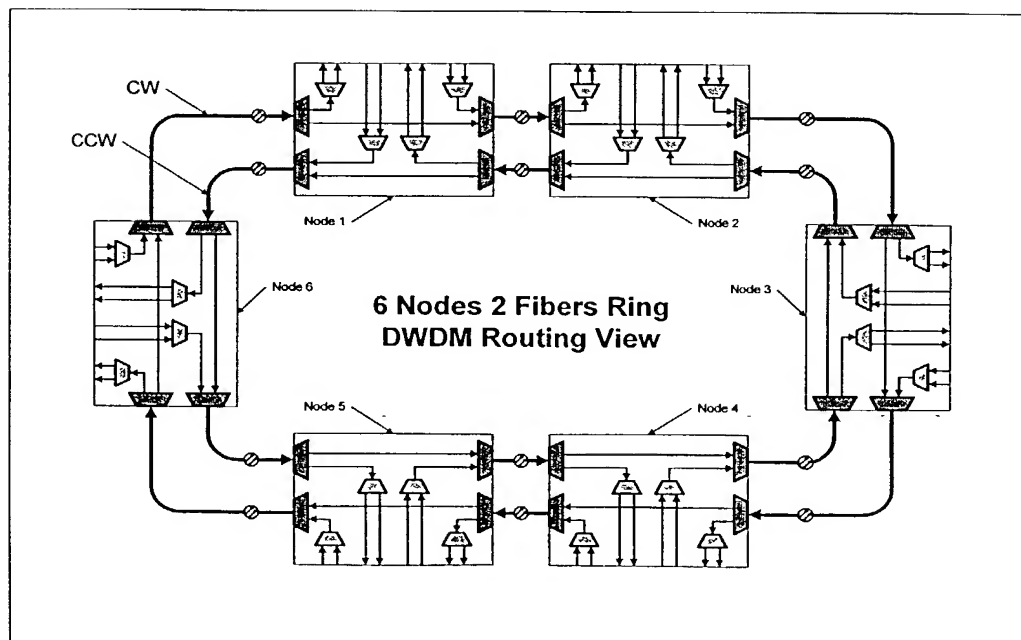


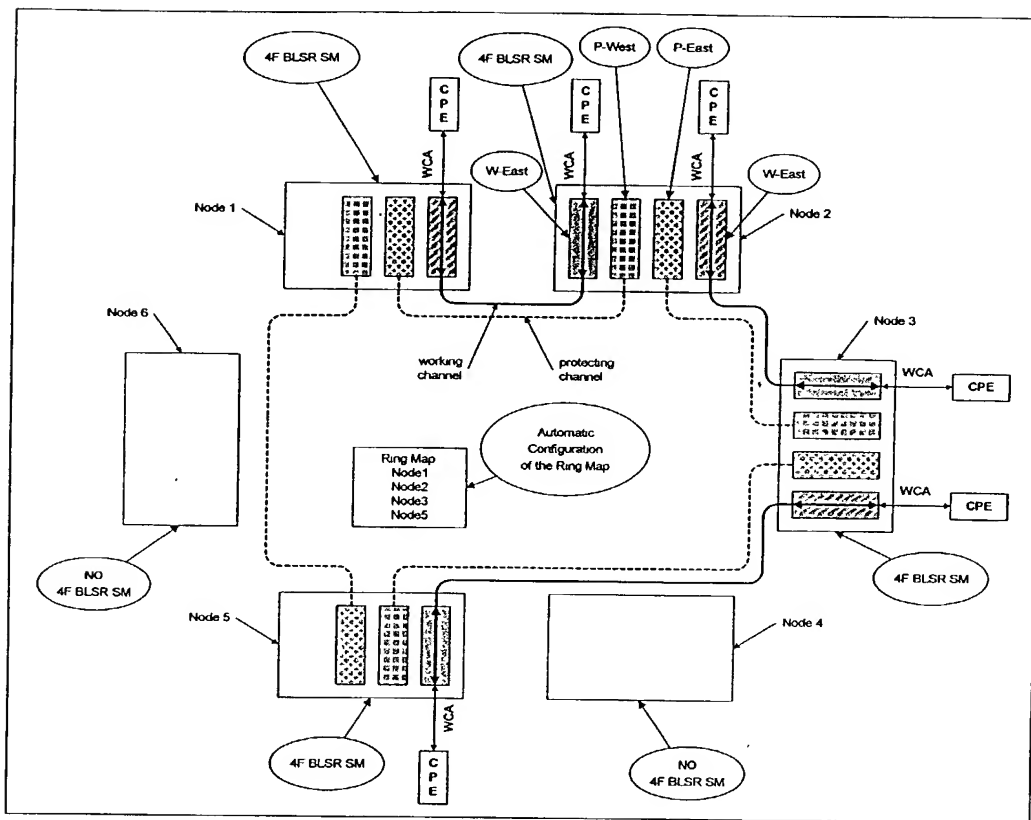
Figure 15: Distributed Switching



21
Figure 1: Network Element View



22
Figure 2: 6 nodes ring view



23
Figure 3: No Failure condition

THE

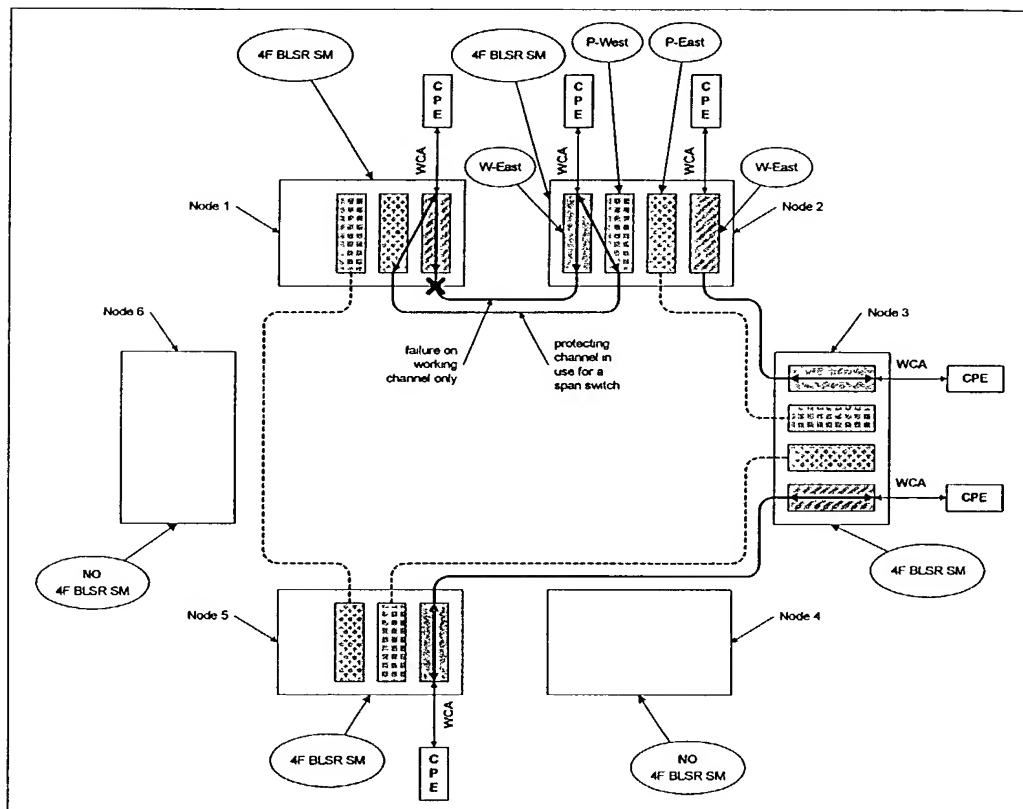


Figure 4: Span switch

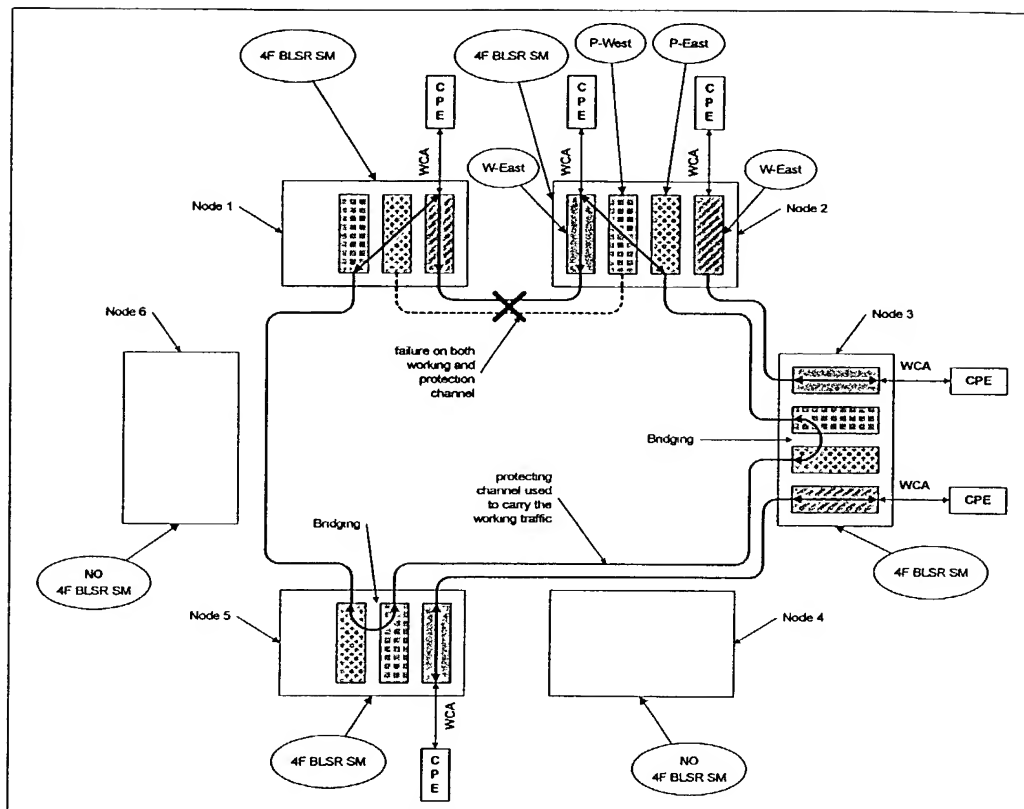
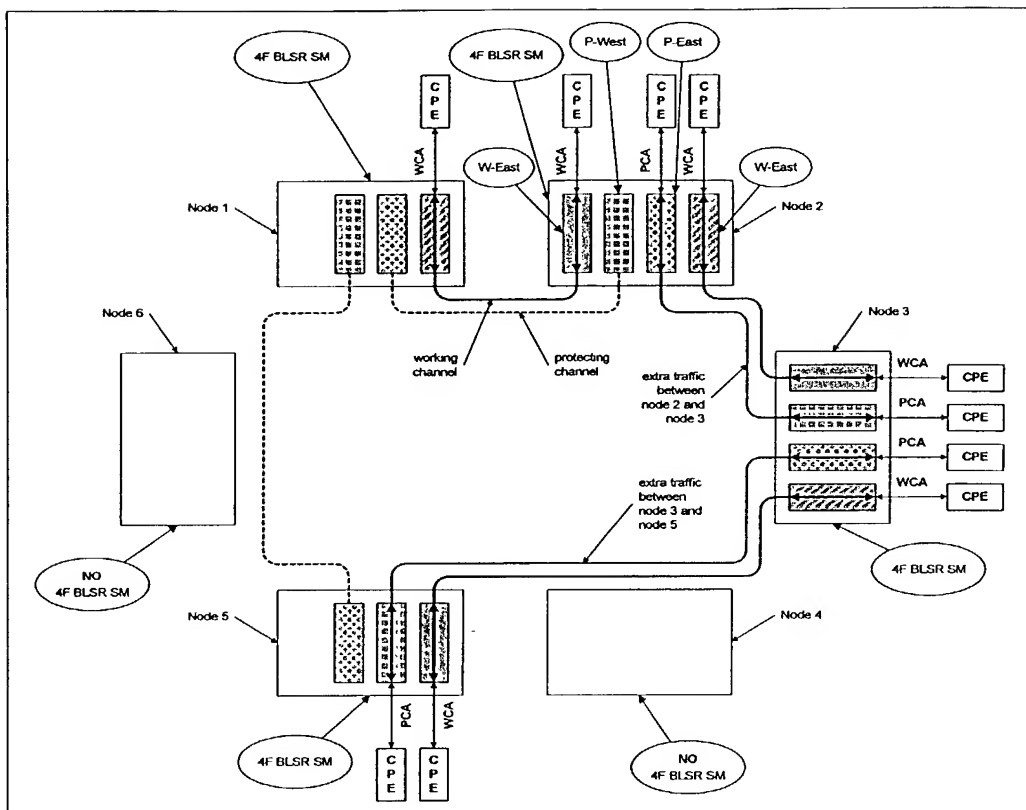
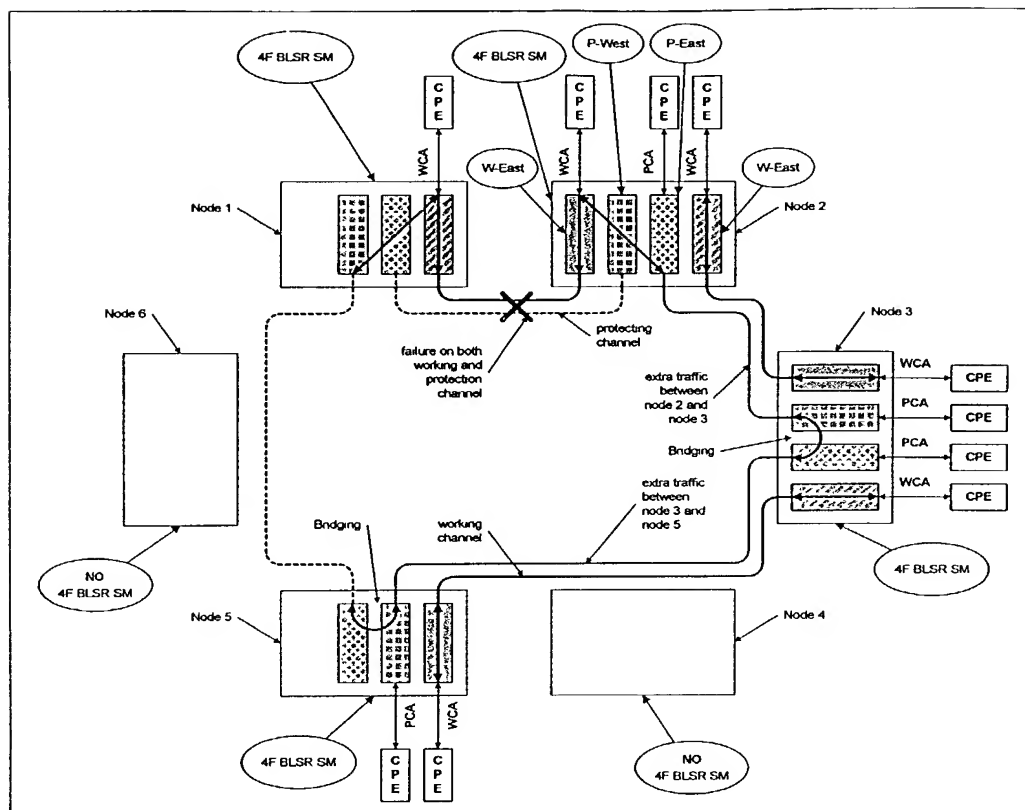
[illegible]

Figure 5: Ring switch



26
Figure 6: PCA traffic



27
Figure 7: Ring switch with PCA traffic present

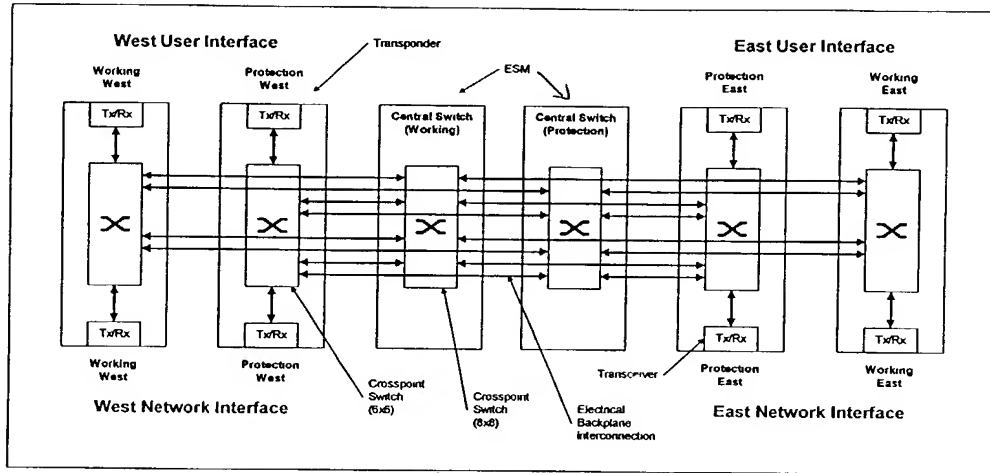


Figure 7: ²⁸Centralized electrical switch

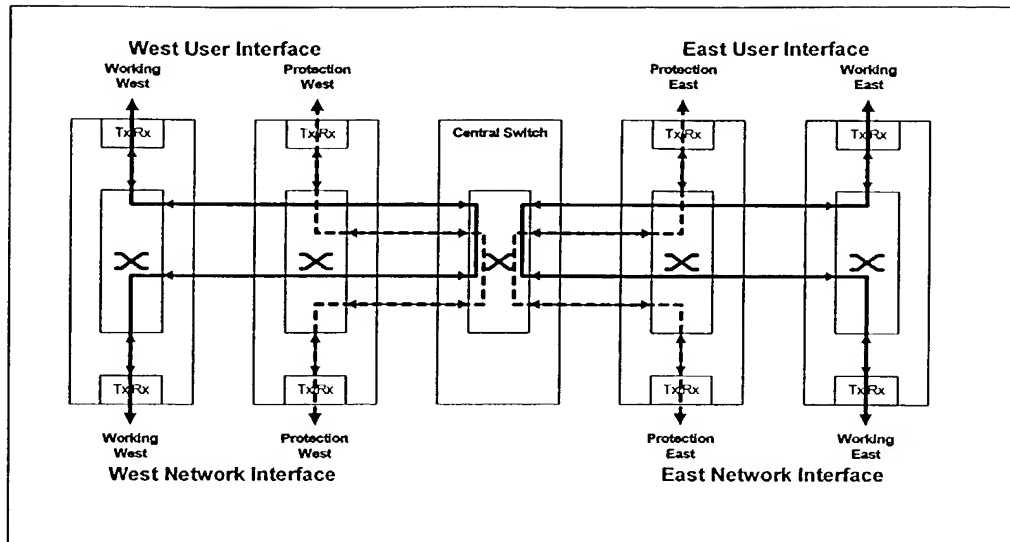


Figure 8: ²⁹ No failure condition

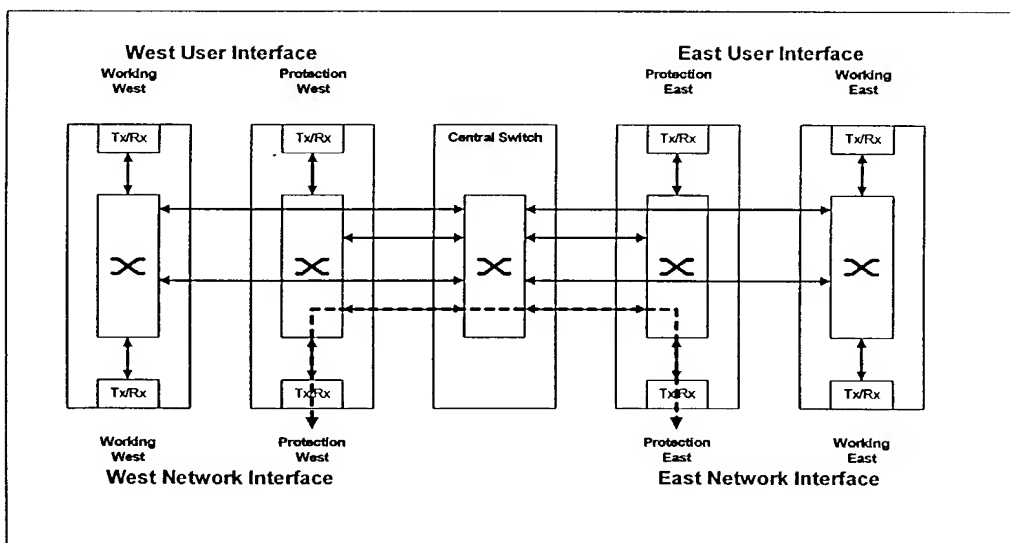


Figure 9: ³⁰ Bridge request on the protection

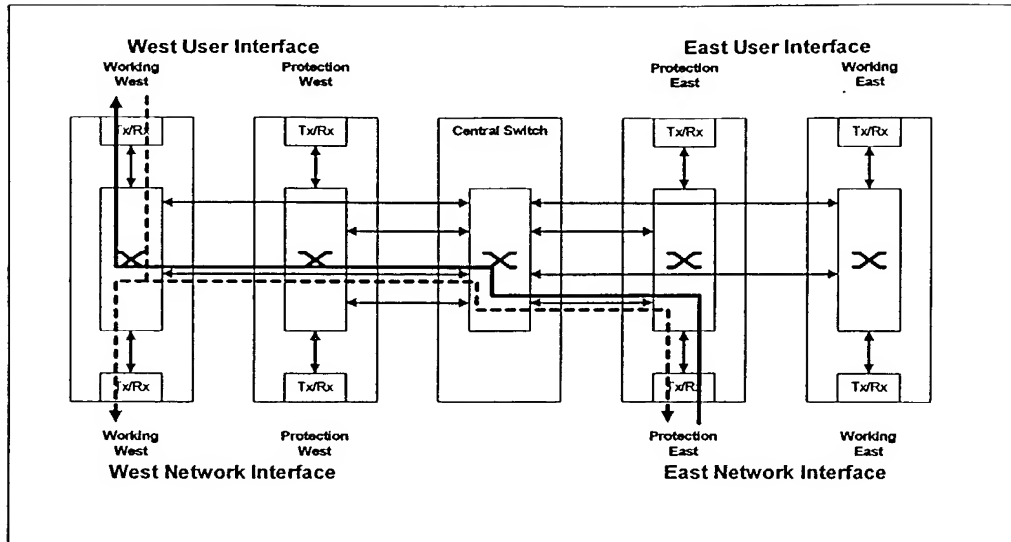


Figure 10: Switch to protection on opposite side

31

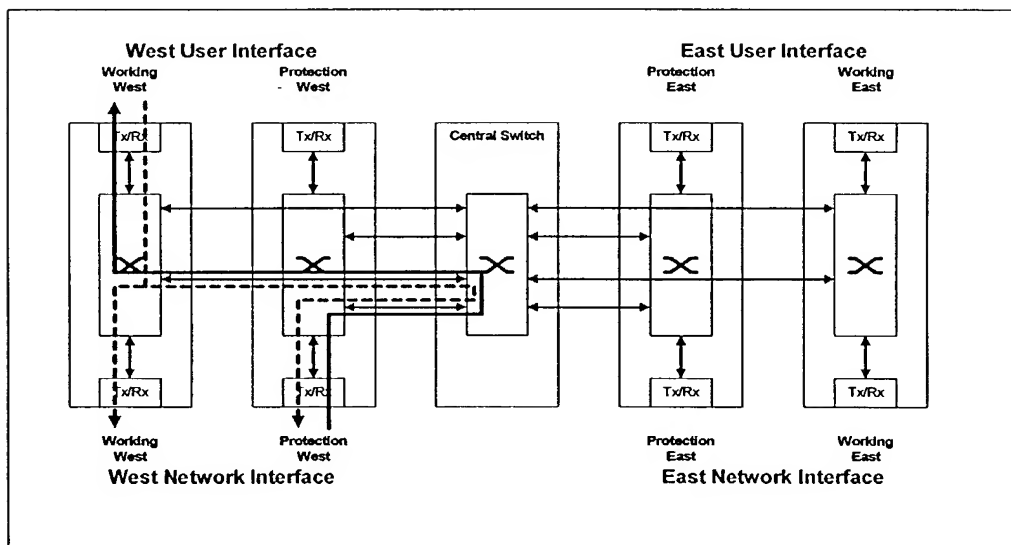


Figure 11: Span switch

32

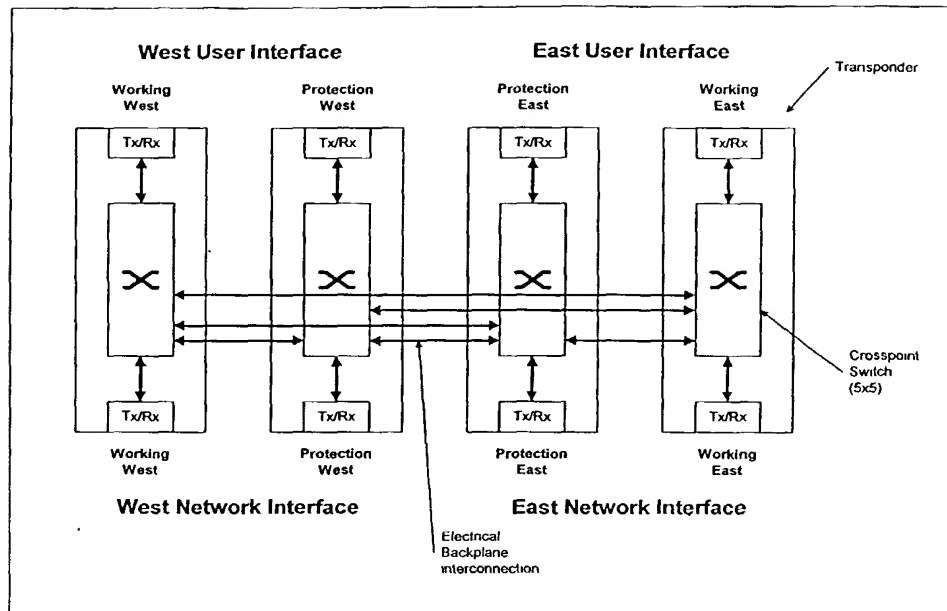


Figure 1: Distributed electrical switch

33

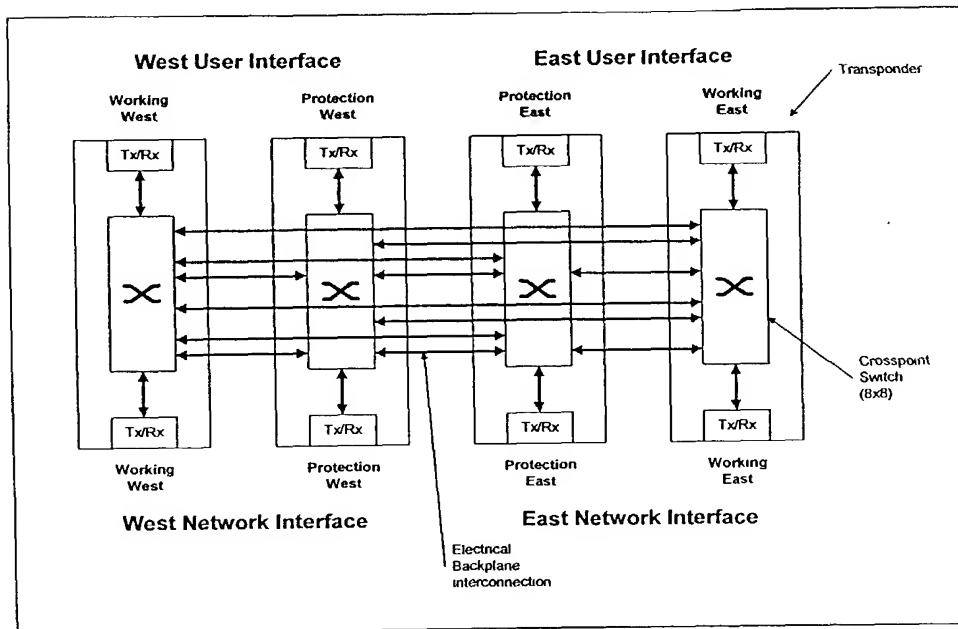


Figure 2: Distributed electrical switch with interconnection redundancy.

34

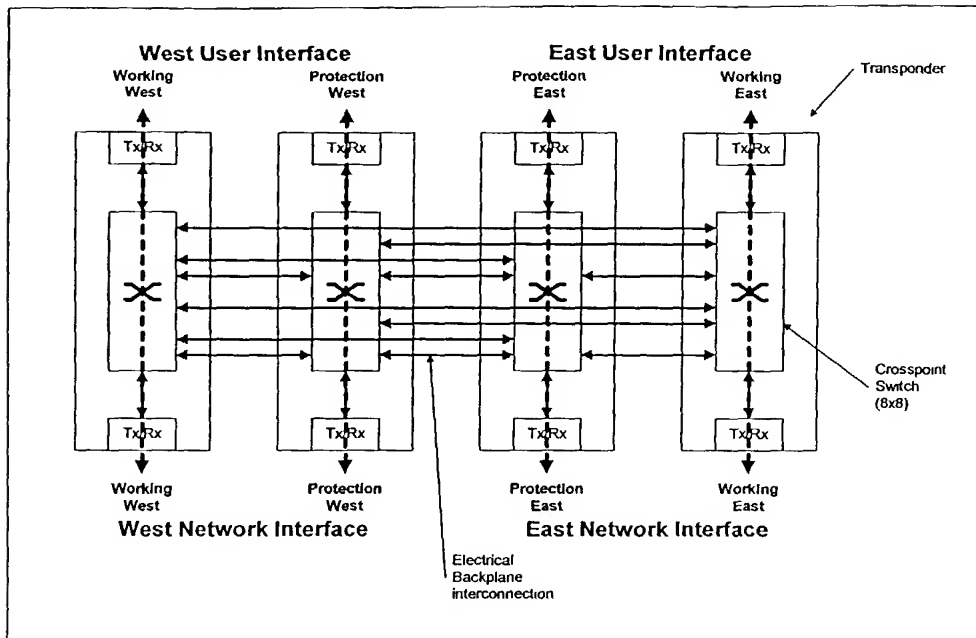


Figure 3: No failure condition

35

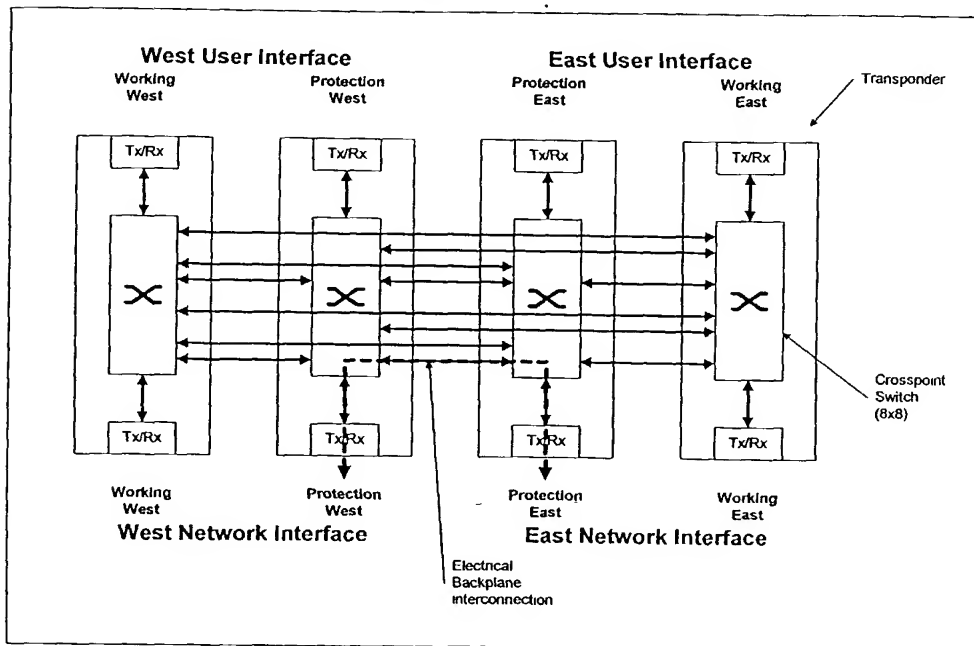


Figure 4: Bridge request on the protection channel

36

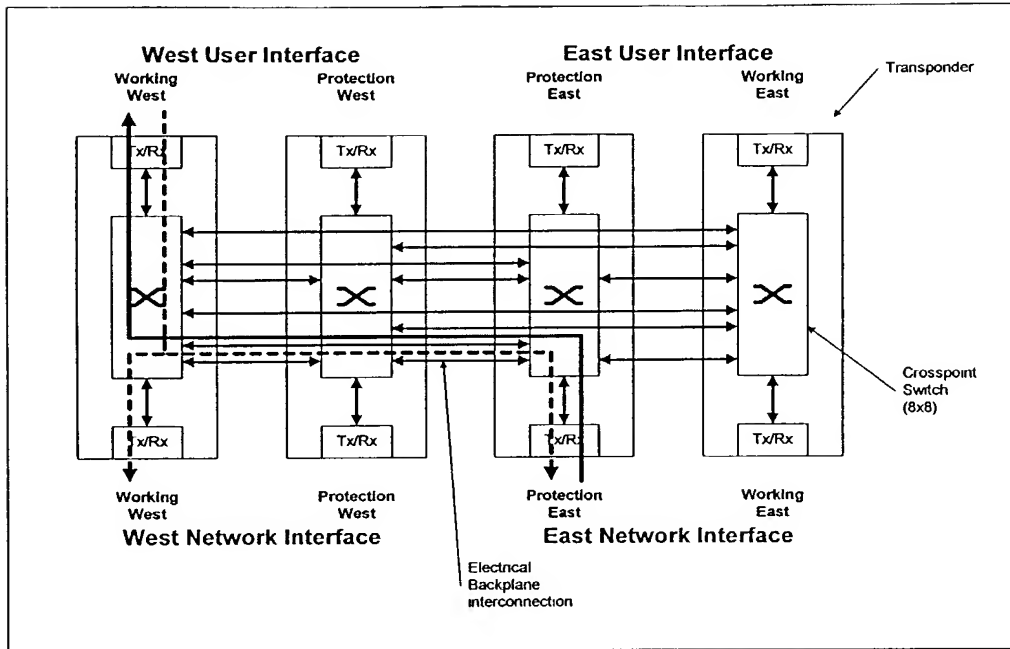


Figure 5: Switch to protection on opposite side

37

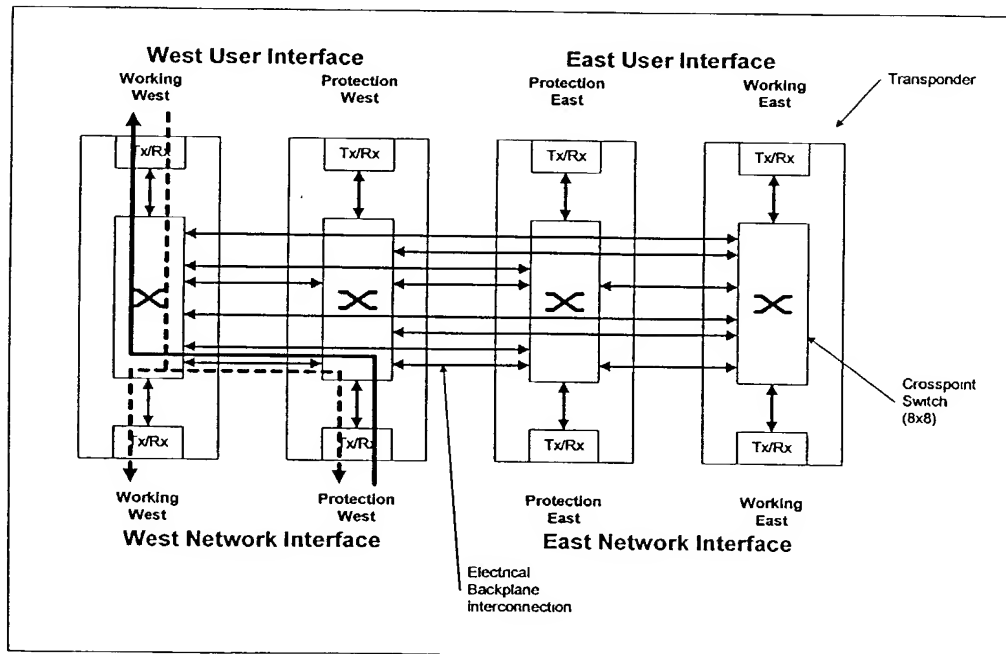


Figure 6: Span switch

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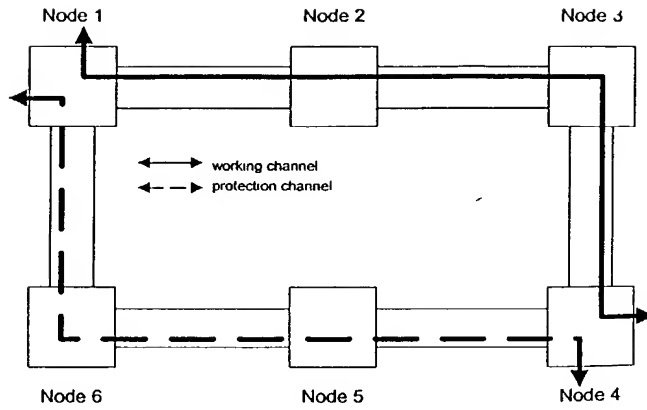


Fig. 39

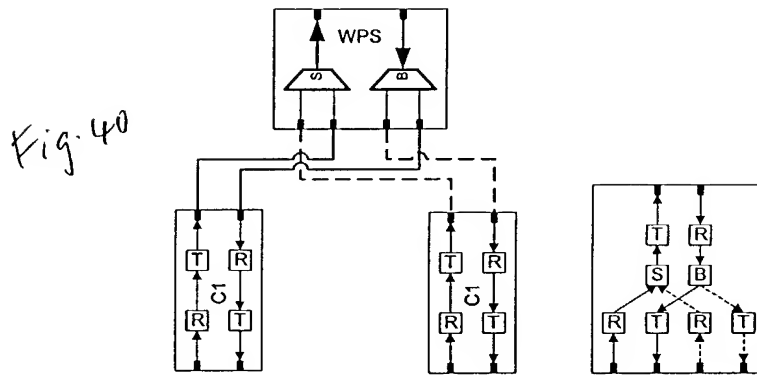


Fig. 40

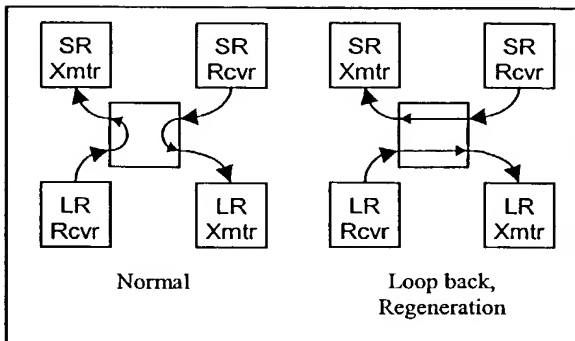
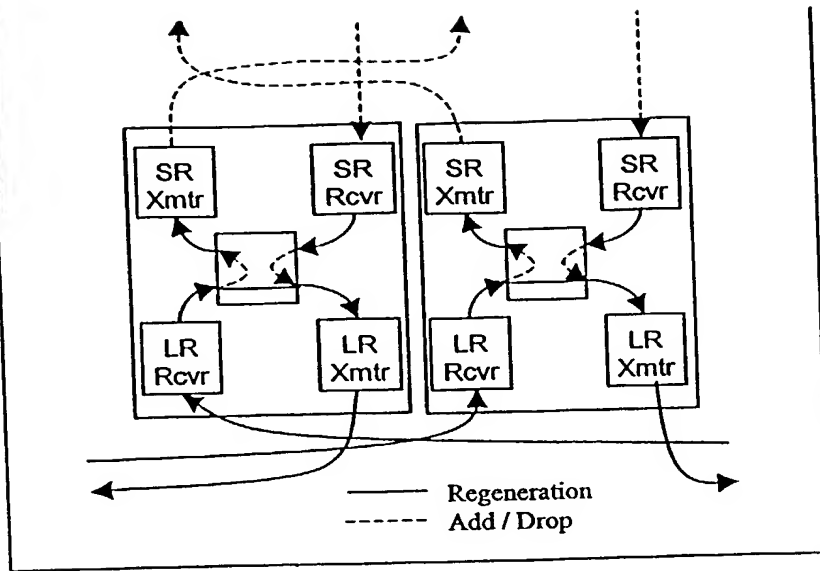
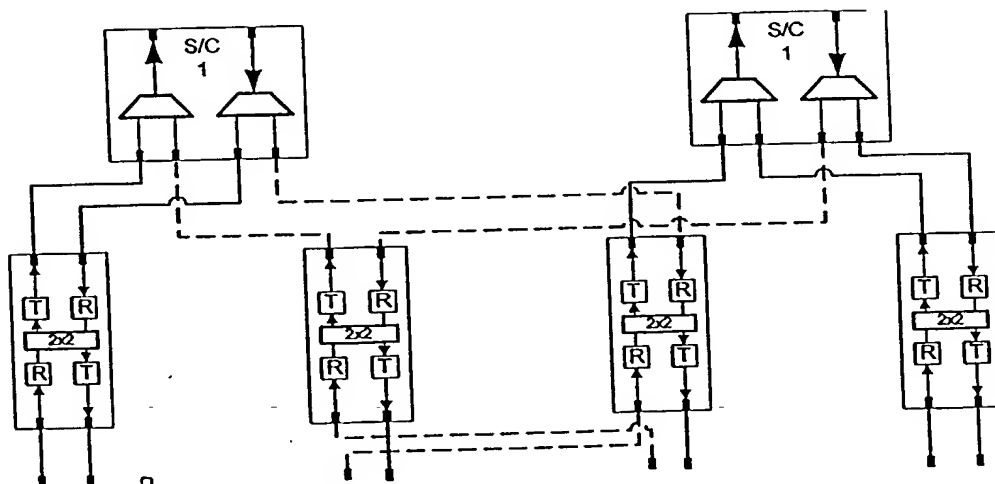


Fig. 41

Electrical Transceiver 2x2 switch



42
Figure 19: Crossover Add/Drop Regeneration



43
Figure 20: O-BPSR switch in Normal mode using O-UPSR and Crossover Add/Drop Regeneration

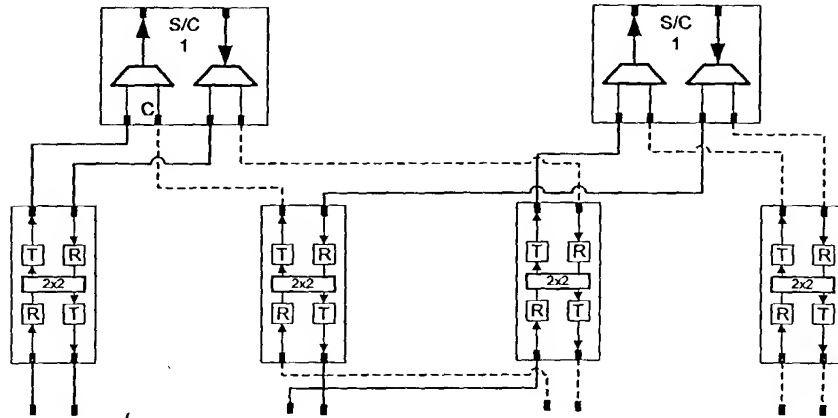
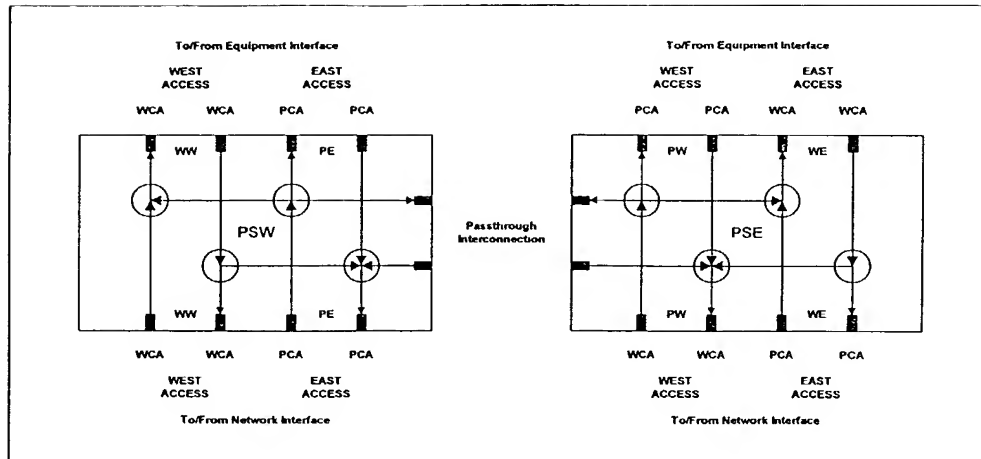
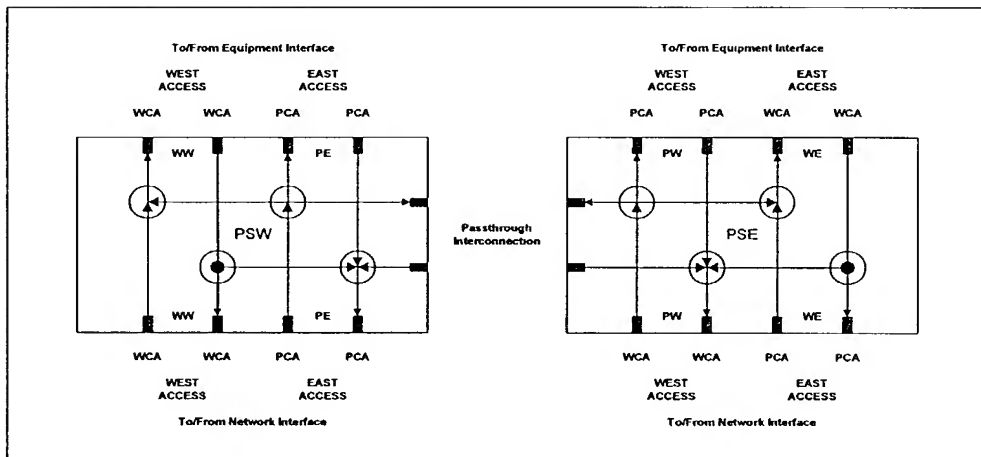


Figure 44: O-BPSR switch in Ring-Switch West mode using O-UPSR and Crossover Add/Drop Regeneration



45
Figure 7: Protection Switch Module



47
Figure 8: Protection Switch Module with bridging support

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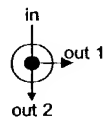
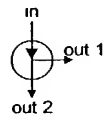
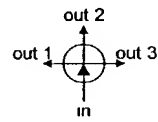
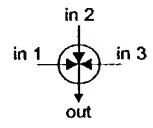
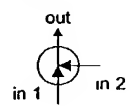
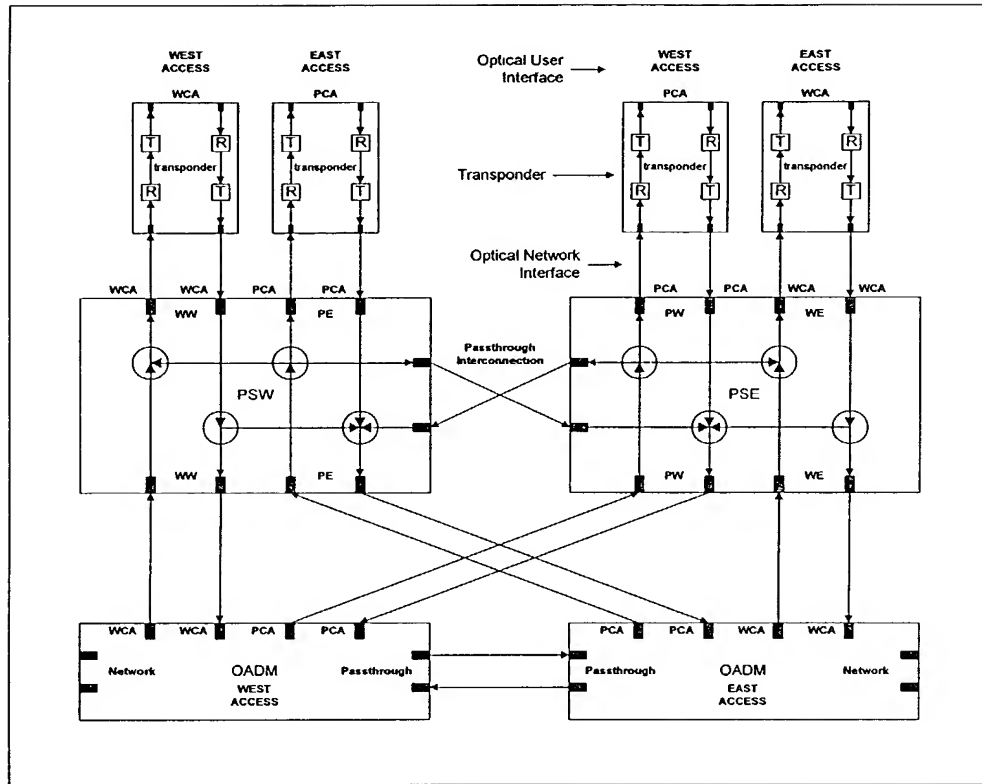


Figure 6: Switch Legend



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Figure 9: Interconnected System

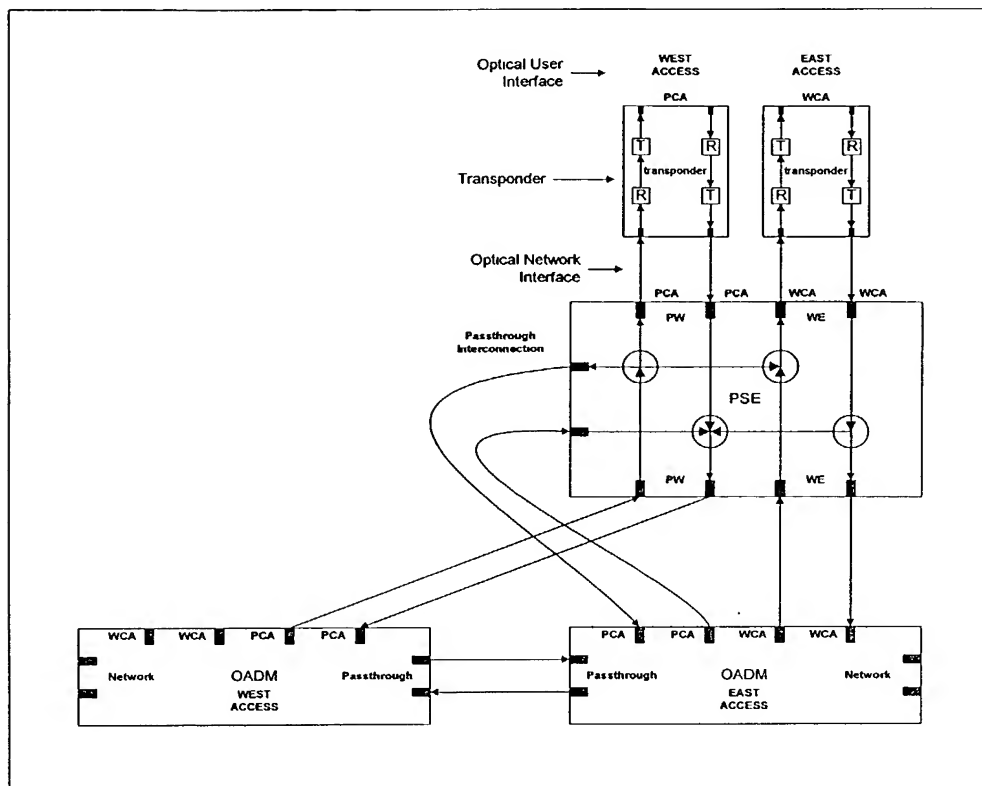


Figure 10: Interconnection system with working east access

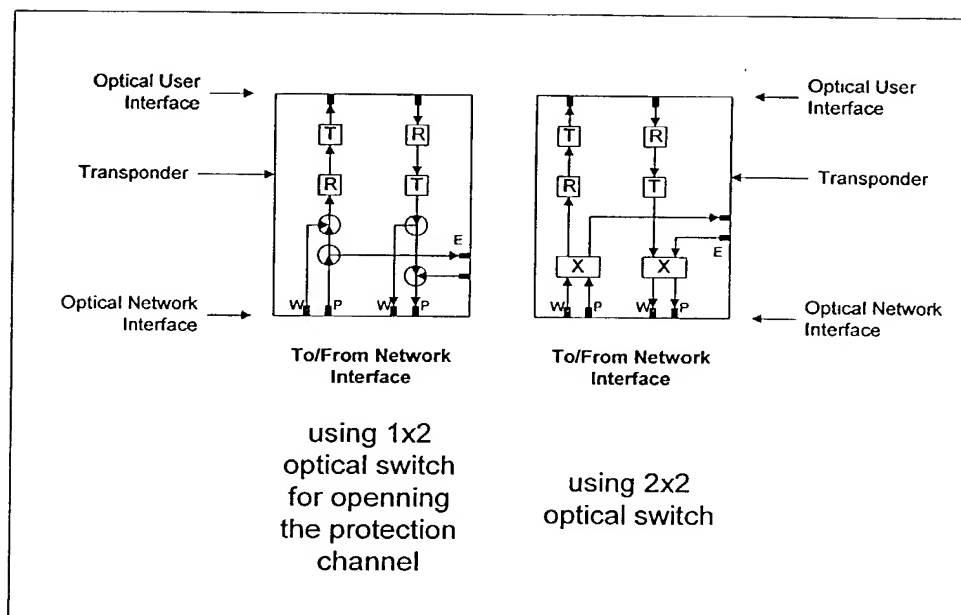


Figure 1: Distribution of the switching function on the transponder

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Figure 2: Distribution of the switching function on the DWDM filter

The diagram illustrates the CH-OSPR system architecture, showing the connection between West and East access points and a central network.

WEST ACCESS:

- Optical User Interface:** The top interface for the West access.
- Transponder with CH-OSPR switch:** A central component within the West access that handles the optical signals.
- WCA (Waveguide Component Assembly):** Two WCA units are shown, each containing a switch (X) and a transponder (T) and receiver (R) pair.
- PCA (Passive Component Assembly):** Two PCA units are shown, each containing a switch (X) and a transponder (T) and receiver (R) pair.
- Network:** The central network block, which includes OADM (Optical Add-Drop Multiplexer) and Passthrough components.

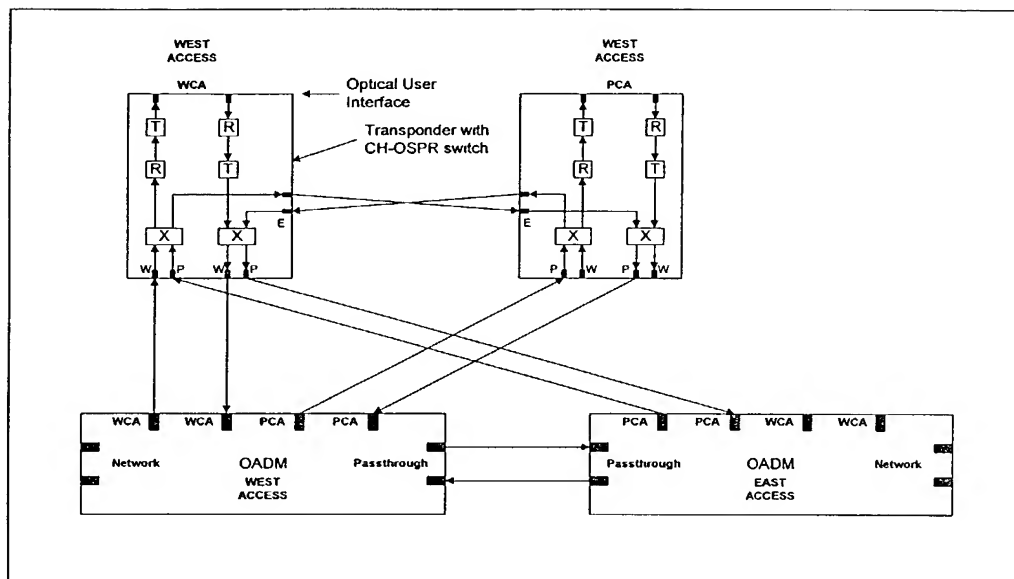
EAST ACCESS:

- Optical User Interface:** The top interface for the East access.
- Transponder with CH-OSPR switch:** A central component within the East access that handles the optical signals.
- WCA (Waveguide Component Assembly):** Two WCA units are shown, each containing a switch (X) and a transponder (T) and receiver (R) pair.
- PCA (Passive Component Assembly):** Two PCA units are shown, each containing a switch (X) and a transponder (T) and receiver (R) pair.
- Network:** The central network block, which includes OADM (Optical Add-Drop Multiplexer) and Passthrough components.

Connections:

- The Optical User Interfaces are connected to the Transponders.
- The Transponders are connected to the WCA and PCA units.
- The WCA and PCA units are connected to the Network block.
- The Network block includes OADM and Passthrough components.

Figure 4: System Interconnection with WCA on East and West



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Figure 5: System interconnection with WCA and PCA

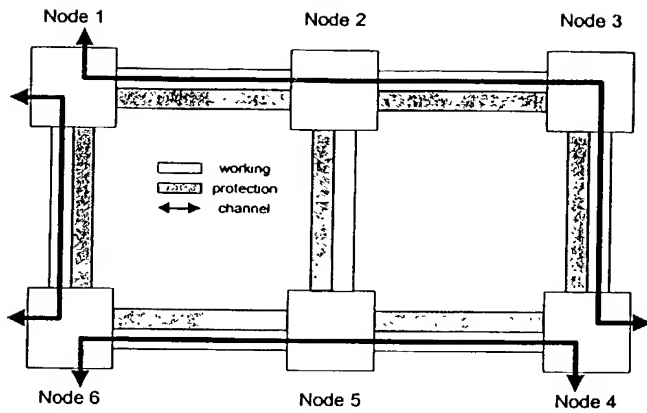


Figure X: Two Interconnected Rings sharing protection bandwidth between N2 & N5.

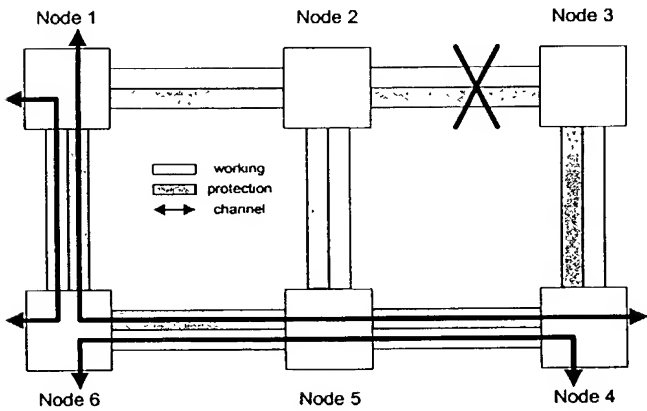
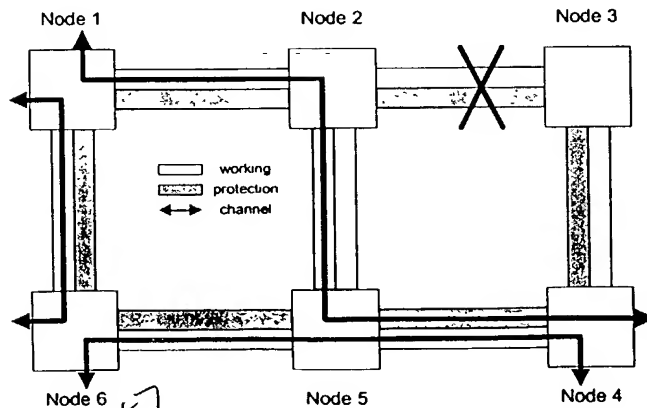


Figure Y: Failure between N2 and N3 with rerouting along virtual ring N1-N2-N3-N4-N5-N6



5 Figure Z: Failure between N2 and N3 with rerouting along virtual ring N2-N3-N4-N5